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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

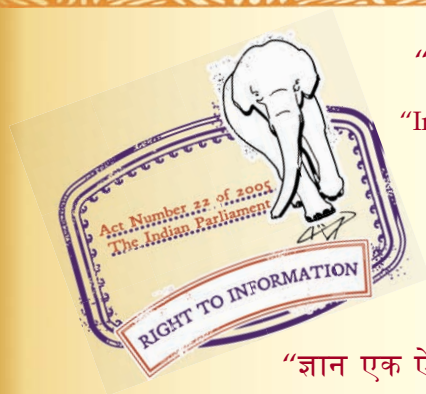
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3391 (1965): Stethoscopes [MHD 13: Veterinary Hospital Planning and Surgical Instruments]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
SPECIFICATION FOR
STETHOSCOPES

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BUREAU OF INDIAN STANDARDS
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Indian Standard

SPECIFICATION FOR STETHOSCOPES

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Indian Standard

SPECIFICATION FOR STETHOSCOPES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 23 December 1965, after the draft finalized by the Anaesthesia, Resuscitation and Allied Equipment Sectional Committee had been approved by the Consumer Products Division Council.

0.2 This Indian Standard is one of a series on diagnostic and anaesthetic equipment, formulated at the instance of the Advisory Committee for Development of Surgical Instruments, Equipment and Appliances of the Ministry of Industry and Supply, Government of India. Other specifications published so far in the series are :

IS : 3390- 1965 Sphygmomanometers, mercurial

IS : 3392-1965 Anaesthetic airways

IS : 3393-1965 Mouth props and airways (London hospital pattern)

0.3 In the preparation of this standard, assistance has been derived from the following :

IND/GS/MED/574 (c) Stethoscope I-1 /2 in folding with diaphragm double outlet to chest piece and pressure tubing. Chief Inspector of General Stores, Ministry of Defence, Government of India.

PNZ 53083-53089 Stethoscope. Polski Komitet Normalizacyjny (Poland).

GG-S-757a Stethoscopes, Bureau of Federal Supply, Government Printing Office, USA.

8.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard lays down the requirements for binaural stethoscopes used for the detection and study of sounds arising within the human or

*Rules for rounding off numerical values (revised).

animal body. It does not cover special stethoscopes such as multiple lead diaphragm ones or those with extra chest pieces used for demonstration purposes.

2. TERMINOLOGY

2.1 For the purpose of this standard, the nomenclature of various parts shall be as indicated in Fig. 1 to 4.

3. TYPES

3.1 A stethoscope may have a chest piece of either bell type or diaphragm type or dual type having a combination of both (see 6.4).

4. MATERIALS

4.1 The side arms and Y-pieces of stethoscopes shall be made of solid-drawn brass tube conforming to IS :407-1961*.

4.2 Recommended materials for the manufacture of other parts of stethoscopes are as follows:

<i>Part</i>	<i>Material</i>
a) Stethoscope binaural section	
1) Ear-piece	Aluminium, bakelite, plastics or nylon.
2) Spring	Steel conforming to designation C55, C55Mn75 with silicon from 1.5 to 2.0 percent r 55Si2Mn90 of IS :1570-1961†. The steel used shall not have sulphur and phosphorus more than 0.05 percent each.
3) Rivet	Brass or stainless steel.
b) Chest piece, bell type	Aluminium, brass or plastics.
c) Chest piece, diaphragm type and chest piece, dual type	
1) Body	Aluminium alloy , die cast or brass.
2) Retaining ring	Brass, nylon or plastics.
3) Diaphragm	Celluloid or plastics.
4) Cap, if provided	Stainless steel or brass sheet conforming to any grade of IS: 410-1959‡.
d) Rubber tubing	Conforming to Grade I of IS : 63 7-1955§.

*Specification for brass tubes for general purposes (*revised*).

†Schedules for wrought steels for general engineering purposes.

‡Specification for rolled brass plate, sheet, strip and foil (*revised*).

§Specification for plain rubber tubing.

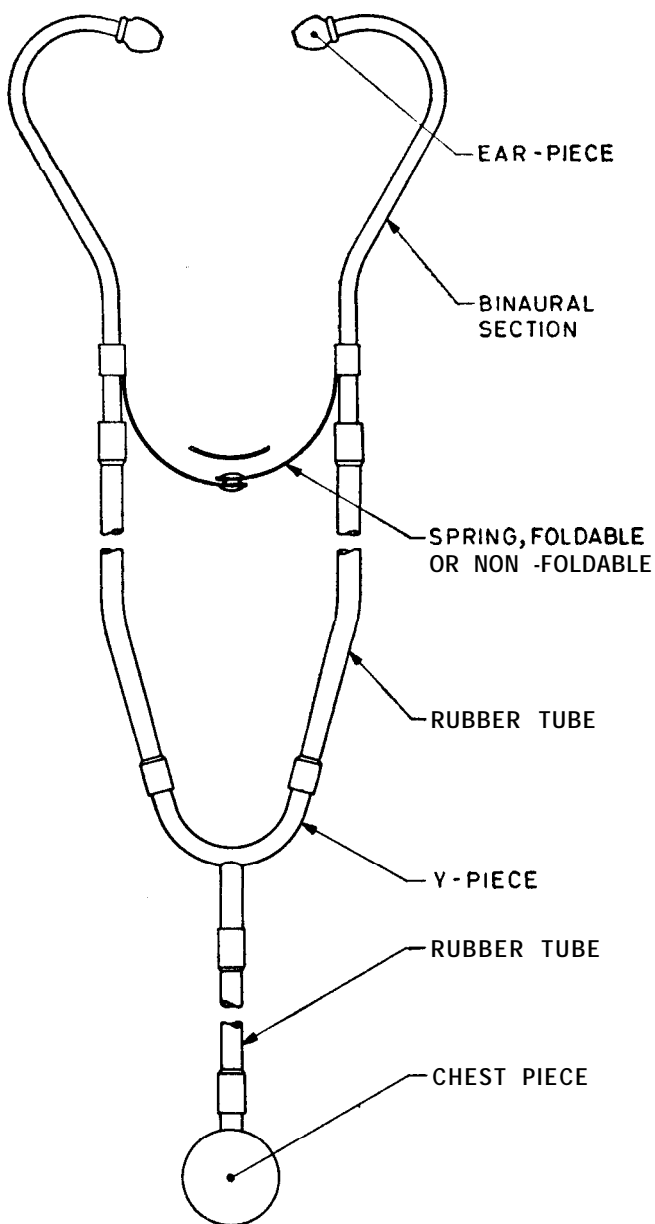


FIG.1 STETHOSCOPE, SCHEMATIC

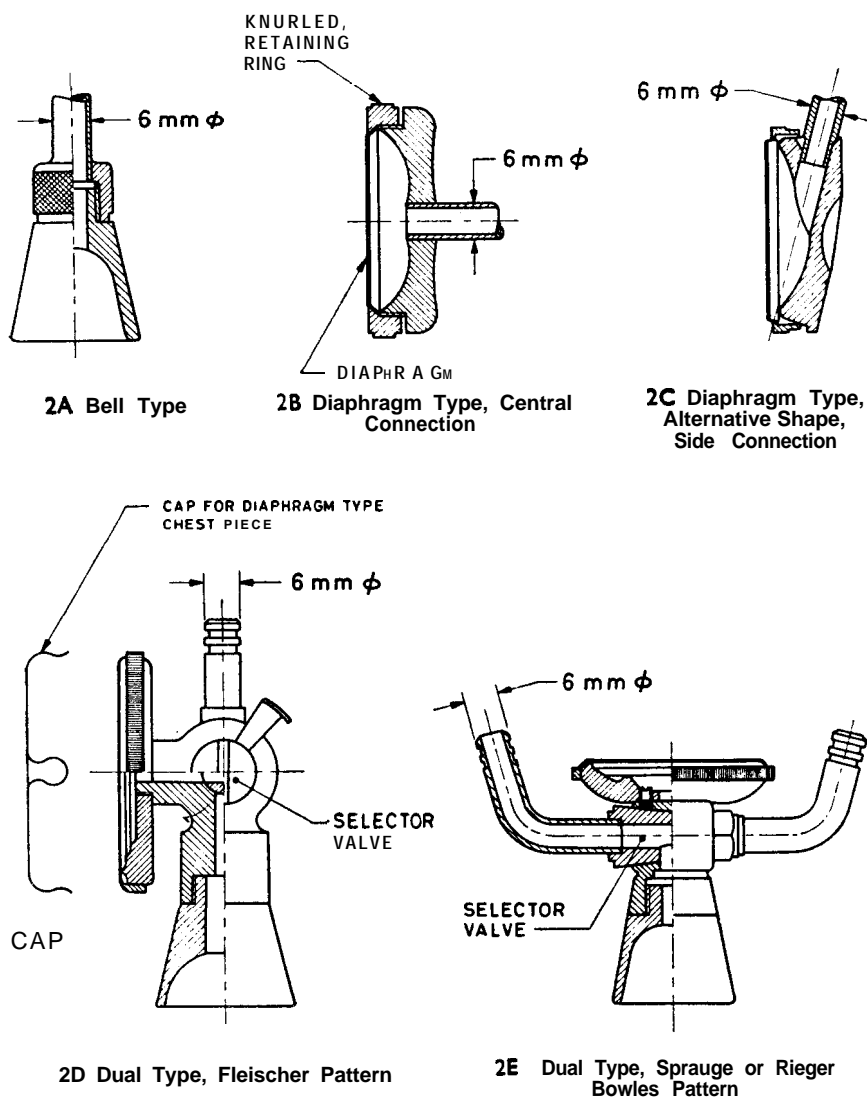


FIG. 2 CHEST PIECES, BELL, DIAPHRAGM AND DUAL TYPES, TYPICAL

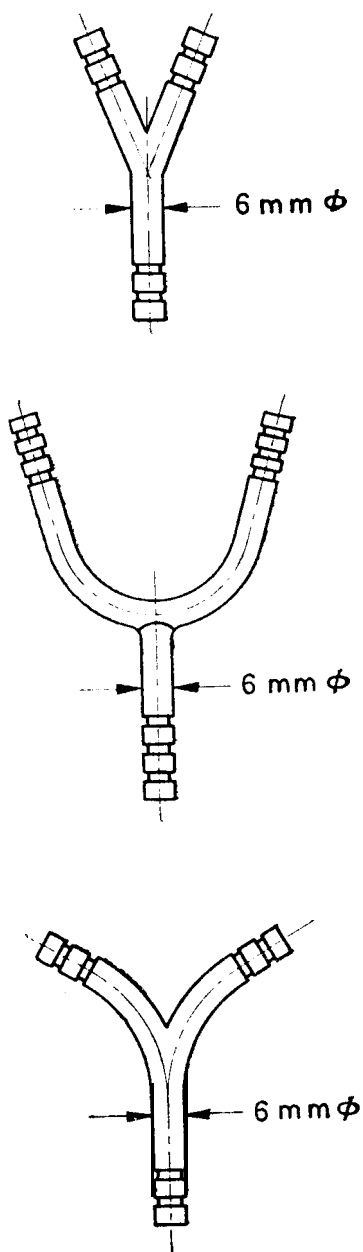
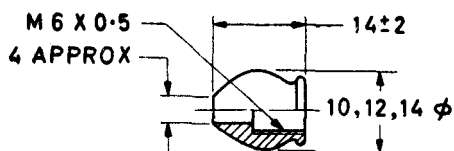
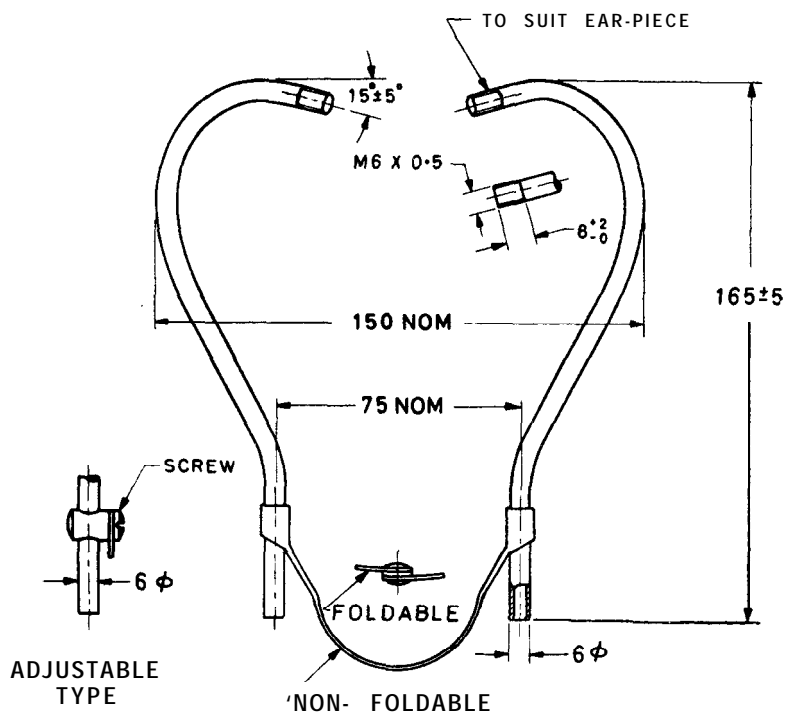
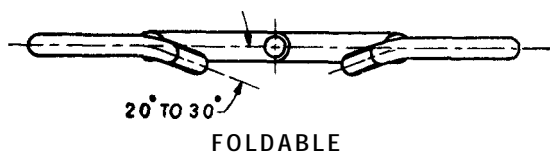


FIG.3 Y-PIECES TYPICAL



EAR-PIECE, TYPICAL,
ENLARGED



All dimensions in millimetre

FIG. 4 STETHOSCOPE, BINAURAL SECTION, TYPICAL

5. SHAPES AND DIMENSIONS

5.1 The shapes and other design details are left to the discretion of manufacturers. The design shall be such that various parts and components of the same manufacture for the same type of stethoscopes shall be completely interchangeable. The brass tubes used for side arms of the binaural section, Y-piece and other connections shall be in accordance with the dimensions given in Fig. 1 to 4. Leading dimensions of the binaural section shall be in accordance with Fig. 4.

6. CONSTRUCTION

6.1 The stethoscope shall be of symmetrical construction and consist of a binaural section, complete with a spring, ear pieces, Y-piece, chest piece and rubber tubing.

6.2 For joints between metal and rubber tubing, the distal ends of metal tubing shall have suitable grooves for retaining the rubber tubing. All metal-to-metal joints shall be of the Luer lock type conforming to the dimensions specified in IS : 3234-1965¹.

6.3 The Y-piece shall be conveniently situated in the stethoscope either fitted on to the chest piece or anywhere between the binaural section and the chest piece.

6.4 The chest piece shall be either bell type or diaphragm type or dual type with combinations as follows:

- a) The diaphragm and the bell chest pieces perpendicular to each other commercially known as **Fleischer** pattern, and
- b) The diaphragm and the bell chest pieces fitted **opposite** to each other commercially known as **Sprague** or **Rieger Bowles** pattern.

In the case of stethoscopes with dual chest pieces, a selector valve shall be suitably provided to enable the use of one or the other chest piece at a time. The selector valve shall be tapered and so finished as to ensure a good and sound-proof fit.

6.5 Retaining ring of the diaphragm type chest piece shall be knurled or otherwise provided with suitable grip and threaded to suit the chest piece.

6.6 The cap for diaphragm chest piece, when provided, shall have not less than three clips for securing it to the diaphragm type chest piece and shall permit easy attachment or removal.

¹Specification for conical fitting for hypodermic syringes, needles and other medical equipment. Luer type.

6.7 The spring shall be evenly hardened and tempered (see 8.1 and 8.2 for tests) and shall be ~~of one~~ of the following constructions:

- a) One-piece construction, that is, non-foldable, either rigidly soldered to or adjustable by means of screws on the arms of the binaural sections.
- b) Two-piece construction, that is, foldable, either rigidly soldered to or adjustable by means of screws on the arms of the binaural sections.

6.8 The ends of binaural sections may be bent slightly (see Fig. 4) to accommodate the direction of the ear holes; in the case of foldable spring, the binaural section may be left straight.

7. WORKMANSHIP AND FINISH

7.1 Workmanship

7.1.1 All metal parts shall be finished smooth all over and shall be free from burrs, cracks or other manufacturing defects. All sharp edges and corners shall be slightly rounded. The screw threads shall be well and evenly cut and all threaded parts shall fit firmly without play.

7.1.2 Residue of soldering and brazing flux shall be removed to prevent corrosion.

7.2 Finish-All brass parts shall be chromium plated over nickel conforming to Grade C of IS :1068-1958*.

8. TESTS

8.1 Test for Hardness of Spring — When tested for hardness, the spring shall have a hardness of 450 to 550 *HV* or 45 to 52 *HRC* (see IS :1501-1959† and IS :1586-1960‡). For measurement of hardness,, any recognized hardness tester suitable to the respective scale may be used.

8.2 Test for Spring — The binaural *section* of the stethoscope shall be placed vertically on a flat surface. Holding the ear pieces between the thumb and fingers of each hand, the arms of the stethoscope shall be so separated that they subtend an angle of 90° with each other. The arms shall then be released and the above test repeated three times. On completion of the test, the spring shall not take a new position.

8.3 Test for Soldering of the Spring to the Tubes — One arm of the binaural sectional shall be firmly gripped in one hand and the spring in the other hand. With moderate force an attempt shall be made to rotate the

*Specification for copper, nickel and chromium electroplated coatings.

†Method for Vickers hardness test for steel.

‡Method for Rockwell hardness test (B and C scales) for steel.

arm inside the collar of the spring. No movement whatsoever shall occur. This test shall then be repeated on the opposite arm.

9. PERFORMANCE

9.1 The stethoscope shall be tested to hear heart beats or other body sounds from lungs, wind pipe, pulse, etc. The body sounds shall be clearly audible to the person using the stethoscope.

9.2 The ear piece of the stethoscope shall fit the external auditory meatuses, so that outside noises will be excluded as far as possible ~~and the~~ instrument causes no discomfort.

10. MARKING

10.1 Each stethoscope shall be legibly and indelibly stamped on the binaural section and the chest piece with the manufacturer's name, initials or recognized trade-mark.

10.1.1 Stethoscope may also be marked with the IS1 Certification Mark.

NOTE — The use of the IS1 Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by IS1 and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by IS1 for conformity to the standard. Details of conditions, under which a licence for the use of the IS1 Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

11. PRESERVATIVE TREATMENT AND PACKING

11.1 The rubber tubing shall be dusted with French chalk.

11.2 The stethoscopes shall be wrapped in soft tissue paper and packed in calico cloth bound card-board carton or other suitable leather or plastics case.

11.3 A label shall be fixed on the carton indicating the manufacturer's name, initials or trade-mark.

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